

CLAIMS

What is claimed is:

1. A composition of matter comprising a polyurethane elastomer prepared by mixing
 - A) a polyurethane prepolymer,
 - B) a curative, and
 - C) a liquid, non-reactive polydimethylsiloxane,wherein C) is present in a concentration of about 0.5 to about 25 % based on the combined weight of A) plus B), and curing the mixture to form the elastomer.
2. The composition of claim 1 wherein the polyurethane prepolymer is prepared from a diisocyanate selected from the group consisting of paraphenylene diisocyanate, tolidene diisocyanate, isophorone diisocyanate, 4,4'-methylene bis (phenylisocyanate), toluene-2,4-diisocyanate, toluene-2,6-diisocyanate, naphthalene-1,5-diisocyanate, diphenyl-4,4'-diisocyanate, dibenzyl-4,4'-diisocyanate, stilbene-4,4'-diisocyanate, benzophenone-4,4'-diisocyanate, 1,3- and 1,4-xylene diisocyanates, 1,6-hexamethylene diisocyanate, 1,3-cyclohexyl diisocyanate, 1,4-cyclohexyl diisocyanate, the three geometric isomers of 1,1'-methylene-bis(4-isocyanatocyclohexane), and mixtures of the foregoing.
3. The composition of claim 2 wherein the diisocyanate is reacted with a polyol selected from the group consisting of polyether polyols, polyester polyols, and hydrocarbon polyols, having a number average molecular weight of at least 250.

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4. The composition of claim 3 wherein the polyol is a polyalkyleneether polyol represented by the general formula $\text{HO}(\text{RO})_n\text{H}$, wherein R is an alkylene radical and n is an integer large enough that the polyether polyol has a number average molecular weight of at least 250.

5. The composition of claim 1 wherein the curative is selected from the group consisting of diamines, polyols, and blends thereof having a melting point below 140° C.

6. The composition of claim 5 wherein the curative is selected from the group consisting of 1,4-butanediol, hydroquinone-bis-hydroxyethyl ether, 1,4-cyclohexane dimethanol, trimethylolpropane, aliphatic tetrols, 4,4'-methylenedianiline, 2,2',5-trichloro-4,4'-methylenediamines, naphthalene-1,5-diamine, ortho, meta, and para-phenylene diamines, toluene-2,4-diamine, dichlorobenzidine, diphenylether-4,4'-diamine, 4,4'-methylene-bis(3-chloroaniline), 4,4'-methylene-bis(3-chloro-2,6-diethylaniline), diethyl toluene diamine, tertiary butyl toluene diamine, dimethylthio-toluene diamine, trimethylene glycol di-p-amino-benzoate, 1,2-bis(2-aminophenylthio)ethane, and methylenedianiline-sodium chloride complex, including the derivatives and mixtures of the foregoing.

7. A method for producing a polyurethane elastomer comprising the steps of:

A) mixing:

1) a polyurethane prepolymer,

2) a curative, in sufficient amount to cure the polyurethane prepolymer,

and

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- 3) a non-reactive, liquid polydimethylsiloxane,
wherein 3) is present in a concentration of from about 0.5% to about 25% based on
the weight of 1) plus 2), and
B) curing the polyurethane prepolymer.

8. The method of claim 7 wherein the polyurethane prepolymer is prepared from a
diisocyanate selected from the group consisting of paraphenylene diisocyanate, tolidene
diisocyanate, isophorone diisocyanate, 4,4'-methylene bis (phenylisocyanate), toluene-2,4-
diisocyanate, toluene-2,6-diisocyanate, naphthalene-1,5-diisocyanate, diphenyl-4,4'-
diisocyanate, dibenzyl-4,4'-diisocyanate, stilbene-4,4'-diisocyanate, benzophenone-4,4'-
diisocyanate, 1,3- and 1,4-xylene diisocyanates, 1,6-hexamethylene diisocyanate, 1,3-
cyclohexyl diisocyanate, 1,4-cyclohexyl diisocyanate, the three geometric isomers of 1,1'-
methylene-bis(4-isocyanatocyclohexane), and mixtures of the foregoing.

9. The method of claim 8 wherein the diisocyanate is reacted with a polyol selected from
the group consisting of polyether polyols, polyester polyols, and hydrocarbon polyols, having
a number average molecular weight of at least 250.

10. The method of claim 9 wherein the polyol is a polyalkyleneether polyol represented by
the general formula $\text{HO}(\text{RO})_n\text{H}$, wherein R is an alkylene radical and n is an integer large
enough that the polyether polyol has a number average molecular weight of at least 250.

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11. The method of claim 7 wherein the curative is selected from the group consisting of diamines, polyols, and blends thereof having a melting point below 140° C.

12. The method of claim 11 wherein the curative is selected from the group consisting of 1,4-butanediol, hydroquinone-bis-hydroxyethyl ether, 1,4-cyclohexane dimethanol, trimethylolpropane, aliphatic tetrols, 4,4'-methylenedianiline, 2,2',5-trichloro-4,4'-methylenediamines, naphthalene-1,5-diamine, ortho, meta, and para-phenylene diamines, toluene-2,4-diamine, dichlorobenzidine, diphenylether-4,4'-diamine, 4,4'-methylene-bis(3-chloroaniline), 4,4'-methylene-bis(3-chloro-2,6-diethylaniline), diethyl toluene diamine, tertiary butyl toluene diamine, dimethylthio-toluene diamine, trimethylene glycol di-p-amino-benzoate, 1,2-bis(2-aminophenylthio)ethane, and methylenedianiline-sodium chloride complex, including the derivatives and mixtures of the foregoing.

13. An article of manufacture comprising a polyurethane elastomer and about 0.5% to about 25% based on the weight of the elastomer of a non-reactive, liquid polydimethylsiloxane, whereby the abrasion resistance of the article is improved with no significant loss in friction.

14. The article of manufacture of claim 13 wherein the article is a railroad side bearing pad.

15. The article of manufacture of claim 13 wherein the article is a skate wheel.

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- 1 16. The article of manufacture of claim 13 wherein the article is a tire.
- 1 17. The article of manufacture of claim 13 wherein the article is a track pad.
- 1 18. The article of manufacture of claim 13 wherein the article is an elastomeric friction
2 brake.
- 1 19. The article of manufacture of claim 13 wherein the article is a scraper blade.